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IN THE
Supreme Court of the United States

KSR INTERNATIONAL CO.,
Petitioner,

v.

TELEFLEX INC. and
TECHNOLOGY HOLDING CO.,
Respondents.

On Writ of Certiorari to the United States Court of Appeals for the Federal Circuit

BRIEF OF INTELLECTUAL PROPERTY LAW PROFESSORS AS *AMICI CURIAE* IN SUPPORT OF PETITIONER

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INTEREST OF THE *AMICI CURIAE*

Amici Curiae respectfully submit this brief in support of Petitioner, KSR International Co., because the judgment below stems from the application of an obviousness test which is inconsistent with the patent statute, with this Court's precedent, and with good patent policy.[1]

Amici are fourteen law professors who teach and write about intellectual property at law schools within the United States and have an interest in the proper interpretation and application of intellectual property law. *Amici* believe that patent law should provide incentives to search for technological solutions that go beyond routine advances. In contrast, the Federal Circuit's incorrect interpretation of the obviousness standard, as applied in this case, provides incentives for seeking patent rights on obvious extensions of existing technologies. The patenting of obvious extensions of existing technologies has high social costs and is contrary to the Constitutional purpose of the patent system.

This case provides the Court with an opportunity to overturn the Federal Circuit's much-criticized current approach to obviousness, which is at odds with the statutory language, inconsistent with this Court's precedent, and contrary to the goals of the patent system. Unless this Court intervenes, countless applications and issued patents on obvious technologies will continue to burden the U.S. Patent and Trademark Office, the federal courts, and the public at large.

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[1] Both parties have consented to the filing of this brief and written consents have been filed with the clerk. Pursuant to this Court's Rule 37.6, *amici* represent that this brief was not authored in whole or in part by counsel for any party, and that no person or entity other than *amici* and their respective educational institutions has made a monetary contribution to the preparation or submission of this brief. The names of the educational institutions are provided for identification purposes only, and the institutions have not reviewed or approved this brief.

SUMMARY OF THE ARGUMENT

The nonobviousness requirement for patentability is imposed so that patents will be granted only for significant advances over previously known technology. An appropriately tuned standard ensures that patents are awarded only for "unobvious developments which would not occur spontaneously from the application of . . . ordinary skill." Giles S. Rich, *The Principles of Patentability,* 42 J. Pat. Off. Soc'y 75, 81-82 (1960). Patenting obvious advances which would have occurred in the ordinary course of competitive research and development creates an unnecessary drag on innovation through higher prices to consumers and transaction costs associated with searching for, licensing, and enforcing these unnecessary patents. The availability of patents on obvious combinations overwhelms the Patent and Trademark Office with applications for patents on obvious combinations of previously existing technologies.

The statutory nonobviousness standard reflects "a careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy." *Bonito Boats, Inc. v. Thunder Craft Boats, Inc.*, 489 U.S. 141, 146 (1989). To strike this balance while avoiding hindsight bias, Congress and this Court have mandated that obviousness be assessed from the perspective of the "person having ordinary skill in the art" (PHOSITA).

The Federal Circuit has adopted a test for obviousness which is inconsistent with this Court's precedent and allows patents to issue on obvious inventions. The Federal Circuit's test denies a patent on a combination of previously available technology only when the patent examiner or a litigation opponent can present evidence of a suggestion, motivation, or teaching to combine in the prior art. Without such a

"suggestion to combine," a claimed invention is never deemed obvious, regardless of the circumstances surrounding its development. While this "suggestion test" is framed as a factual inquiry, it effectively swallows the legal inquiry into obviousness and imposes an inappropriately low standard. The suggestion test's focus on evidence of what could be done by combining the prior art marginalizes the PHOSITA, equating ordinary *skill* with knowledge and motivation and ignoring the aspect of ordinary skill comprising routine experimentation and application of ordinary tools, methods, and problem-solving abilities.

Because a prima facie showing of obviousness cannot be made without evidence of a "suggestion to combine" prior art references, the Federal Circuit's approach also turns this Court's observation that the inventive context may be relevant to assessing obviousness into a one-way ratchet of "objective indicia of nonobviousness" which can be used only in support of patent issuance. Compare *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966) ("[S]econdary considerations . . . might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquiries may have relevance.") with *Gambro Lundia AB v. Baxter Healthcare Corp.*, 110 F.3d 1573, 1579 (Fed. Cir. 1997) (referring to "the fourth prong of the obviousness determination—the objective indicia of nonobviousness"); *Hughes Tool Co. v. Dresser Inds.*, 816 F.2d 1549, 1556 (Fed. Cir. 1987) (referring to "objective indicia of nonobviousness (the so-called 'secondary considerations'"). Framed in this way, the obviousness inquiry ignores social, economic, and technical changes that might render particular advances *obvious* upon the application of ordinary skill in the art.

Besides its substantive failings, the Federal Circuit's approach fails to take advantage of patent examiner expertise. "[T]he primary responsibility for sifting out unpatentable material lies in the Patent Office," *Graham*, 383 U.S. at 18.

Federal Circuit precedent requires patent examiners to present evidence in the record when seeking to rely on the common knowledge of those skilled in the art or the nature of the problem to be solved to meet the suggestion requirement. *See, e.g., In re Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002). By imposing excessively stringent evidentiary requirements and framing the ultimate judgment of obviousness as essentially a factual inquiry, the Federal Circuit's approach hampers the PTO's application of its expertise to the obviousness question. This is particularly unfortunate since the *ex parte* nature of patent examination leaves the patent examiners as the only available representatives of the "person having ordinary skill in the art" during examination. Despite these limitations imposed on the examiners' ability to weed out obvious patent claims, issued patents that combine prior technology are afforded a presumption of validity which can be overcome only by clear and convincing evidence of a suggestion, motivation, or teaching to combine.

The perspective of the "person of ordinary skill in the art" must be brought back into its rightful place in the legal inquiry into obviousness. A robust inquiry into the level of ordinary skill in the art—which considers not only what is already known in a particular field, but also what is within the reach of ordinary skill, including routine experimentation and application of tools, methods, and problem-solving abilities—should be undertaken as a basis for the legal assessment of obviousness.

The consideration given to the technical and social context in which a claimed invention was made should expand to incorporate factors suggesting that a claimed invention was an obvious application of ordinary skill, rather than being confined to a one-sided inquiry into indicia of nonobviousness. With the *Graham* paradigm thus reinstated, the patentability standard would better serve its Constitutional purpose of promoting technological progress.

ARGUMENT

I. Obviousness is a Question of Law Incorporating Important Issues of Innovation Policy

To obtain protection under federal patent law, technological developments within the scope of statutory subject matter under 35 U.S.C. § 101 must meet three substantive requirements, which can be summarized as utility, novelty, and nonobviousness. *See* 35 U.S.C. §§ 101 (utility), 102 (novelty), and 103 (nonobviousness). As this Court has recognized,

> [b]oth the novelty and the nonobviousness requirements of federal patent law are grounded in the notion that concepts within the public grasp, or those so obvious that they readily could be, are the tools of creation available to all. They provide the baseline of free competition upon which the patent system's incentive to creative effort depends.

Bonito Boats, Inc. v. Thunder Craft Boats, Inc., 489 U.S. 141, 156 (1989). This legal standard has Constitutional dimensions. "Innovation, advancement, and things which add to the sum of useful knowledge are inherent requisites in a patent system which by constitutional command must 'promote the Progress of . . . useful Arts.' This is the *standard* expressed in the Constitution and it may not be ignored." *Graham v. John Deere Co.*, 383 U.S. 1, 6 (1966) (emphasis in original).

Because the novelty condition precludes patenting only if a claimed invention is completely anticipated by a single piece of prior art, the requirement of nonobviousness is the sole provision which fully implements the core notion of patent law that patents should be granted only for significant advances over previously known technology. Patents are awarded as "an inducement, to bring forth new knowledge." *Graham*, 383 U.S. at 9. Thus, as articulated by one of the principal drafters of the 1952 Patent Act, only "unobvious

developments which would not occur spontaneously from the application of . . . ordinary skill" are patentable. Giles S. Rich, *The Principles of Patentability,* 42 J. Pat. Off. Soc'y 75, 81-82 (1960). Obvious developments "will be made anyway, without the 'fuel of interest' which the patent system supplies." *Id.* Patenting combinations of what is already known that would have been developed without the patent incentive needlessly imposes the costs of exclusivity on the public.

To implement the core patent policy of granting patents only on significant advances in knowledge, Congress chose a standard embodied in Section 103 of the Patent Act, which denies patent protection when "the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains." 35 U.S.C. § 103. The statutory standard embodies "a careful balance between the need to promote innovation and the recognition that imitation and refinement through imitation are both necessary to invention itself and the very lifeblood of a competitive economy." *Bonito Boats,* 489 U.S. at 146.

The Court of Appeals for the Federal Circuit has developed a different, and lower, standard than that embodied in the Patent Act. Rather than focus on what the person of ordinary skill in the relevant art would find obvious, the Federal Circuit's test denies a patent only if there is evidence of a specific "suggestion, teaching, or motivation to combine the relevant prior art teachings in the manner claimed." Appendix to Petition for Certiorari (hereinafter "Pet. App.") at 6a (citing prior Federal Circuit authorities). This "suggestion test" is found neither in the Patent Act nor in this Court's relevant precedent. It sets the patentability threshold below what would be appropriate to ensure that patents, on average, are granted when they are needed to induce technological

progress beyond that which will occur as a matter of course without the patent incentive.

The ultimate question of whether a particular technological advance is sufficient to merit an award of patent exclusivity is a question of law. *Graham*, 383 U.S. at 17, citing *Great A&P Tea Co. v. Supermarket Corp.*, 340 U.S. 147, 155 (1950). This is as it must be—the determination whether "the difference between [a] new thing and what was known before" is "sufficiently great to warrant a patent" is at bottom a question of innovation policy. *Graham*, 383 U.S. at 14-15, quoting S. Rep. No. 82-1979 (1952) and H. R. Rep. No. 82-1923 (1952). Implicit in the legal interpretation of the statutory phrase "would have been obvious" is a determination of just how nonobvious a new development must be before a patent is granted.

The baseline of free competition, coupled with first mover advantages and other means of profiting from innovative activity, such as robust trademark protection, provides a natural engine of technical progress on which the patent system is meant to build. *See, e.g.*, John H. Barton, *Non-Obviousness*, 43 IDEA 475, 491, 493 (2003) (noting non-patent incentives for invention and citing Wesley M. Cohen et al., *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)* (Nat'l Bureau of Econ. Research Working Paper No. W7552, 2000), *available at* http://www.nber.org/papers/w7552 (last visited Aug. 9, 2006) for survey evidence indicating the importance of non-patent incentives).

Patents are not necessary for advances that are the natural outcome of the competitive market in a particular technology and its concomitant routine level of research and development. Patents, rather, ought to inspire those inventive efforts and disclosures that would otherwise be deterred by the free riding of competitors. Granting patents on innovations that are not substantial enough to require a patent incentive

imposes high social costs—including the transaction costs of licensing, deterrence of follow-on invention, and the administrative and litigation costs of unnecessary patent examination and enforcement. *See* Joseph S. Miller, *Building a Better Bounty: Litigation-Stage Rewards for Defeating Patents*, 19 Berkeley Tech. L.J. 667, 690 (2004) (discussing social costs of improvidently granted patents).

The appropriate level of inventiveness necessary for patentability may vary by technological area. Some technological areas, such as software, tend to be highly cumulative and incremental. In such an art, it will often be well within the competence of the ordinarily skilled artisan to take pieces of prior technology and meld them together into a new whole. Other areas, such as pharmaceuticals, may be less predictable and may require large investments and long years of research to make significant advances. The statutory requirement reflects this variance because it judges obviousness from the perspective of the "person having ordinary skill in the art" (or PHOSITA), thus incorporating differences in the baseline competitive processes in different fields. The PHOSITA perspective is critical if we are both to avoid awarding patents for developments that would arise as a matter of course in the ordinary application of inventive skill and to avoid denying patents to inventions that appear deceptively simple in hindsight but pose problems not evident to the outsider to a particular technology.

In *Graham*, this Court laid out three central factual questions which must be answered in order for the legal determination of obviousness to be made: "the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved." *Graham*, 383 U.S. at 17. This Court also noted the potential for the "circumstances surrounding the origin of the subject matter sought to be patented" to provide some additional "indicia of obviousness or nonobviousness." The *Graham* factors, along

with the non-technical "secondary considerations," provide input for answering the legal question of obviousness. They amply guard against the application of hindsight by focusing the entire inquiry on the context in which an invention was made.

II. The Federal Circuit's Suggestion Test Collapses the Legal Determination of Nonobviousness into a Factual Determination of What is Available in the Prior Art.

Over the past two decades, the Federal Circuit has gradually developed an obviousness test which effectively replaces the broad legal and policy considerations properly embodied in the obviousness determination with a factual inquiry into what is already available in the prior art. The Federal Circuit permits invalidation of patents (or denial of applications) for obviousness only when challengers can present evidence of a "suggestion or incentive," *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577 (Fed. Cir. 1984), "teaching, suggestion or incentive," *In re Geiger*, 815 F.2d 686, 688 (Fed. Cir. 1987), "reason, suggestion, or motivation," *In re Oetiker*, 977 F.2d 1443, 1447 (Fed. Cir. 1992), or "teaching, suggestion or motivation," *In re Raynes*, 7 F.3d 1037, 1039 (Fed. Cir. 1993), to combine previously existing technologies in the prior art. Evidence of such a "suggestion to combine" "in the prior art" is part of the *prima facie* showing of obviousness that patent examiners or later litigants must make. *See In re Kahn*, 441 F.3d 977, 986 (Fed. Cir. 2006); *Karsten Mfg. Corp. v. Cleveland Golf Co.*, 242 F.3d 1376, 1385 (Fed. Cir. 2001), ("in holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention.")

This suggestion test cannot be found anywhere in Section 103 or in any other part of the Patent Act. This Court has

directly addressed the issue of obviousness on several occasions. None of its discussions gives any basis for grafting a suggestion test onto the statutory language. *See e.g., Graham*, 383 U.S. at 17-18 (laying out the factors underlying the nonobviousness determination). Indeed, in its seminal interpretation of Section 103 of the Patent Act in *Graham*, this Court not only discussed the factors relevant to the determination of obviousness without once mentioning a "suggestion test," it also reversed an appellate court's finding of nonobviousness despite the appellate court's conclusion that there was "nothing in the prior art suggesting [the] unique combination of these old features" in the claimed invention. *Graham*, 383 U.S. at 30. Thus, it would appear that the Federal Circuit's suggestion test would have led to the opposite result in *Graham* itself.

While the suggestion test is framed as a factual inquiry, it, unlike the factual inquiries laid out by this Court in *Graham*, essentially preempts the legal inquiry by focusing on what is already in the prior art, leaving scant space for legal and expert assessment. History and common sense teach that competition itself is an engine of innovation, propelling progress even without the incentives provided by patent rights. Yet the suggestion test answers the legal and policy questions of obviousness by imposing a uniformly low standard which is little more than a generalized novelty requirement.

III. The Suggestion Test Lowers the Nonobviousness Standard by Disregarding the Ordinary Problem-Solving Ability of the Skilled Artisan.

By replacing the legal inquiry into obviousness with a factual inquiry into motivation to combine, the suggestion test essentially swallows the obviousness inquiry. It obscures the importance of the factual inquiry into the level of ordinary *skill* in the art mandated by this Court and required by the statutory command to judge obviousness from the

perspective of the "person having ordinary skill in the art." As Professor Rebecca Eisenberg has noted:

> [The Federal Circuit] has all but ignored the statutory directive that judgments of nonobviousness be made from the perspective of the PHOSITA [person having ordinary skill in the art]. Today, PHOSITA sits on the sidelines of obviousness analysis. Courts consult PHOSITA on the scope, content, and meaning of prior art references but not on the ultimate question of whether the invention would have been obvious at the time it was made in light of the prior art.

Rebecca Eisenberg, *Obvious to Whom? Evaluating Inventions from the Perspective of PHOSITA*, 19 Berkeley Tech. L.J. 885, 888 (2004).

The Federal Circuit's analysis in this very case exemplifies the short shrift given to the person of ordinary skill in the art. The Federal Circuit stated that, besides explicit suggestions "in the prior art references," implicit suggestions to combine might be found "in the knowledge of those of ordinary skill in the art that certain references . . . are of special interest or importance in the field;" or "from the nature of the problem to be solved, leading inventors to look to references relating to possible solutions to that problem." Pet. App. at 6a. (Citations omitted). The District Court had based its finding of a suggestion or motivation to combine references in part on the "nature of the problem to be solved." Pet. App. at 42a-43a. The Federal Circuit rejected the District Court's findings because the "nature of the problem to be solved" provides a cognizable motivation to combine references only when "two prior art references address the precise problem that the patentee was trying to solve." Pet. App. at 12a. In this instance, the problems addressed by the references did not track the specifics of the patent at issue quite precisely enough. Pet. App. at 12a-13a.

Despite lip service to the inquiry into whether the nature of the problem would have "led a person of ordinary skill in the art to combine the prior art teachings in the particular manner claimed," Pet. App. at 12a, the Federal Circuit's analysis paid no attention to how such a person would have viewed the prior art references in light of the problem the *patentee* was trying to solve. There was apparently no room for the possibility that a person of ordinary skill in the art might find it obvious to apply prior art technology to a problem slightly different from the problem articulated in the prior art reference.

As applied in this case, the knowledge of those of ordinary skill in the art is used to help determine the scope and content of the applicable prior art, but there appears to be no room for the application of routine problem-solving skill. The nature of the problem similarly serves only to motivate a search for references addressing the specific problem at hand. This approach limits the role of the PHOSITA to that of a sort of reference librarian, who can locate appropriate prior art references but is apparently incapable of applying or recombining them with even a modicum of creativity in light of his or her knowledge and skill.

The suggestion test is not needed for selecting which references should be considered in assessing obviousness, however. The "scope and content of the prior art" is determined by the doctrine of analogous arts. *See, e.g.*, *In re Bigio*, 381 F.3d 1320 (Fed. Cir. 2004) ("Two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved."). *See also Graham*, 383 U.S. at 35 ("The problems confronting Scoggin and the insecticide industry were not insecticide problems; they were mechanical closure problems. Closure devices in such a closely related art as

pouring spouts for liquid containers are at the very least pertinent references.") Once the scope and content of the prior art are determined, obviousness should be assessed by considering what advances an ordinarily skilled artisan could make based on that art, not by determining whether the references address the same problem as the invention under review.

Some recent Federal Circuit opinions have begun to suggest a broader view of the scope of implicit suggestions to combine prior art references. *See, e.g., Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 411 F.3d 1332 (Fed. Cir. 2005); *Ruiz v. A.B. Chance Co.*, 357 F.3d 1270 (Fed. Cir. 2004). The recent opinion in *In re Kahn*, 441 F.3d at 988, for example, states that "in considering motivation in the obviousness analysis, the problem examined is not the specific problem solved by the invention but the general problem that confronted the inventor before the invention was made." According to this recent take on the suggestion test:

> [t]he motivation-suggestion-teaching test asks not merely what the references disclose, but whether a person of ordinary skill in the art, possessed with the understandings and knowledge reflected in the prior art, and motivated by the general problem facing the inventor, would have been led to make the combination recited in the claims. From this it may be determined whether the overall disclosures, teachings, and suggestions of the prior art, and *the level of skill in the art—i.e., the understandings and knowledge of persons having ordinary skill in the art* at the time of the invention—support the legal conclusion of obviousness.

Id. (Emphasis added).

While this attempt to employ a broader version of the suggestion test is an improvement over the narrower version applied in many other cases, it still does not solve the underlying failings of the "suggestion test." Even here, in perhaps its broadest statement of the test to date, the Federal Circuit does not acknowledge that ordinary *skill* encompasses more than knowledge. The court explicitly equates "the level of skill in the art" with "understandings and knowledge." This equation ignores the part of ordinary skill comprising routine experimentation and application of ordinary tools, methods, and problem-solving abilities and continues to preempt the legal assessment of whether a particular advance was sufficient to warrant a patent by a factual inquiry into the content of the prior art.

"Trained scientists, engineers and other practitioners are seldom so dull-witted as to unvaryingly require the specific, step-by-step combination of elements from the prior art." John R. Thomas, *Formalism at the Federal Circuit,* 52 Am. U. L. Rev. 771, 802 (2003). As Professor Eisenberg has noted, "[a]ctive practitioners of a technology bring more to a problem than may be found in written prior art, including training, judgment, intuition, and tacit knowledge acquired through field experience. Scientific and technological work involve the application of craft skills that are familiar to practitioners but defy explicit articulation." Eisenberg, 19 Berkeley Tech. L.J., at 897, *citing* Jerome R. Ravetz, *Scientific Knowledge and its Social Problems* 75-76 (1971).

The Federal Trade Commission has also recognized the extent to which the suggestion test neglects the ordinary creativity of the PHOSITA:

> Inventive processes typically involve judgment, experience, and common sense capable of connecting some dots. The suggestion test, rigidly applied, assumes away a PHOSITA's typical levels of creativity and insight and

> supports findings of nonobviousness even when only a modicum of additional insight is needed. . . . The *presence* of 'specific and definitive art references with clear motivation of how to combine those references' may confirm the obviousness of an invention. In contrast, the *absence* of such prior art references does not provide any evidence about whether a PHOSITA could have combined prior art references to achieve the invention, given the typical level of insight in that field.

Federal Trade Commission, *To Promote Innovation: The Proper Balance of Competition and Patent Law and Policy*, Chap. 4, at 14 (2003). (Emphasis added.) As the FTC recognizes, the presence of a suggestion, teaching or motivation to combine prior art references demonstrates obviousness, but only consideration of whether the application of ordinary skill could have produced the claimed invention within a reasonable time frame can determine whether the invention meets the legal standard of non-obviousness.

The Federal Circuit's approach to the "nature of the problem" prong does not overcome the suggestion test's basic confusion of (a) the underlying factual inquiry into the relevant context in which the claimed invention was made with (b) the legal inquiry as to whether the associated advance over the prior art is sufficient to warrant a patent. The question whether the advance represented by the patent claims is sufficiently beyond what would result from routine research and development without the patent incentive is not a factual inquiry into whether the "nature of the problem to be solved" would motivate the invention.

The predominant role assigned to the suggestion test has had the effect of marginalizing the determination of the "level of ordinary skill in the art." This marginalization is evident from a reading of the case law. Often there is no

explicit consideration of the level of ordinary skill in the art at all. Even when it is nominally considered, the result is usually a recitation of a "resume of the person of ordinary skill in the art." Once this "resume" has been established, however, it rarely, if ever, plays any role in the substantive consideration of the obviousness issue. At the Federal Circuit's inception, it set out factors to be considered in determining the level of ordinary skill in the art in *Environmental Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 696 (Fed. Cir. 1983), yet it has rarely discussed those factors in its opinions. *See* Joseph P. Meara, *Just Who is the Person Having Ordinary Skill in the Art? Patent Law's Mysterious Personage*, 77 Wash. L. Rev. 267, 278, 289 (2002) (noting that "[a]t the end of the year 2000, only five of the court's obviousness opinions cited the factors of *Environmental Designs*" and that in those "five subsequent nonobviousness opinions citing the factors of *Environmental Designs*, the Federal Circuit has provided little guidance for the use of the factors."). Indeed, the Federal Circuit appears not to have referred to the factors for determining the level of skill in the art at all since 2000.

In effect, the Federal Circuit's approach substitutes knowledge in the art—"the understandings and knowledge of persons having ordinary skill in the art at the time of the invention"—for skill in the art—the methods, tools, and problem-solving skills that are routinely applied in a particular field of technology. It substitutes factual questions about suggestions to combine the prior art for the legal determination of the sufficiency of the claimed advances in light of the prior art.

IV. The Federal Circuit's Suggestion Test Precludes Consideration of Relevant Social and Economic Factors Indicating Obviousness

In *Graham*, this Court recognized that certain "secondary considerations" "might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." *Graham*, 383 U.S. at 17-18. *Graham* listed "commercial success, long felt but unsolved needs, failure of others, etc." as potentially relevant "indicia of *obviousness or nonobviousness*," (emphasis added), and explicitly anticipated a "case-by-case development" of the obviousness test. Contrary to that expectation, the Federal Circuit has frozen the inquiry into "the circumstances surrounding the origin of the subject matter sought to be patented" into a rigid list of "objective indicia of *nonobviousness*," *Orthopedic Equipment Co. v. All Orthopedic Appliances, Inc.*, 707 F.2d 1376, 1379, 1383 (Fed. Cir. 1983) (emphasis added) (equating "secondary considerations" with "objective indicia of nonobviousness"), which can only be used as a thumb on the nonobvious side of the scale. The threshold nature of the suggestion test turns the inquiry into contextual indications of "obviousness or nonobviousness" into a one-way ratchet which can only contribute to patent issuance. Without a "motivation to combine" in the prior art, a claimed invention is never deemed obvious, regardless of the circumstances surrounding its development. On the other hand, the Federal Circuit requires that "objective indicia of nonobviousness" be considered in every case—even when there is a finding of a motivation to combine. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538 (Fed. Cir. 1983) ("[E]vidence rising out of the so-called 'secondary considerations' must always when present be considered *en route* to a determination of obviousness.")

Recent experience suggests that there are additional contextual factors that should inform the obviousness inquiry. Social and economic developments may strongly evidence

the *obviousness* of particular advances. Circumstantial indications of obviousness might include technical advances within or outside of the particular field of the invention at issue that motivate the combination at hand. For example, the development of personal computers and the internet and other computing advances have given rise to numerous opportunities to make use of computers in ways that were obvious to those skilled in the art once the technology became available. Methodological advances in the biotechnology area have led to results that many have argued should not have been patentable due to the ease with which they could be achieved once the tools became available. As Professors Dan L. Burk and Mark Lemley remark, "the Federal Circuit has bent over backwards to find biotechnological inventions nonobvious, even if the prior art demonstrates a clear plan for producing the invention." *Is Patent Law Technology-Specific?*, 17 Berkeley Tech. L.J. 1155, 1156 (2002). Especially in fast-moving fields, nearly simultaneous development of the same advance by more than one party may indicate the obviousness of the advance even if there is a race to patent the result. (This will not always be the case, of course, since sometimes near-simultaneous development may be the result of patent-inspired investment solving a particular problem.) At a minimum, nearly concurrent development by others who do not race to patent the results is strong evidence that an advance was obvious.

Other social changes may give rise to or draw attention to a particular problem, the solution to which becomes obvious once attention is paid to it. A change in the law, for example, might give rise to a new possibility to combine prior technology in a commercially attractive way. *See* Jay Dratler, Jr., *Alice in Wonderland Meets the U.S. Patent System*, 38 Akron L. Rev. 299, 302 (2005) (arguing that the patent claims at issue in the case of *State Street Bank & Trust Co. v. Signature Financial Group, Inc.*, 149 F.3d 1368 (Fed. Cir. 1998), involved merely "pedestrian arithmetic calculations, mostly

as required by rules of the SEC and other accounting and tax authorities."); Richard H. Stern, *Scope-of-Protection Problems with Patents and Copyrights on Methods of Doing Business*, 10 Fordham Intell. Prop. Media & Ent. L.J. 105 (1999), App. A, (comparing the patent claims in *State Street Bank* with U.S. tax law concerning flow-through of pool income to a partner and avoidance of taxation of the pool entity and purporting to show that the claims merely track the applicable IRS regulations). Other social and cultural changes may have similar effects. *See, e.g., Scott & Williams v. Aristo Hosiery Co.*, 300 F. 622, 624-27 (D.N.Y. 1924) (L. Hand, J.) (concluding that a new stocking seam arrangement invented in response to changing consumer tastes was an unpatentable variation of prior art seams, notwithstanding its great commercial success), *aff'd* 7 F.2d 1003 (2d Cir. 1925).

Consideration of the way in which changing technological, social, or economic context can give rise to obvious combinations of prior technologies is in some sense the converse of the "long-felt need" indicator of nonobviousness. If a need has only recently arisen or become apparent, a solution may become obvious at around the same time. When the obviousness standard does not recognize this possibility, each social or technical development can lead to a "gold rush" of socially wasteful efforts to patent combinations of well-known technology in response to that development.

The rubric of inventive context also provides an appropriate place for the consideration of how old components of a new technology interact. This Court's most recent precedent on the subject of obviousness has been interpreted by some as setting out a special "synergy test" for interactions among components of so-called "combination patents." *See Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976) ("We cannot agree that the combination of these old elements to produce an abrupt release of water directly on the barn floor from storage tanks or pools can properly be characterized as synergistic."); *Anderson's-Black Rock, Inc. v. Pavement*

Salvage Co., 396 U.S. 57, 61 (1969) ("A combination of elements may result in an effect greater than the sum of the several effects taken separately. No such synergistic result is argued here."), both citing *Great A&P Tea Co.*, 340 U.S. at 152, ("Courts should scrutinize combination patent claims with a care proportioned to the difficulty and improbability of finding invention in an assembly of old elements.")[2] A "synergy test" was rejected by the Federal Circuit and criticized by commentators because of the difficulty in differentiating combination patents from all others and the vagueness of the synergy concept. *See Stratoflex*, 713 F.2d at 1540 ("A requirement for "synergism" or a "synergistic effect" is nowhere found in the statute . . . synergism may point toward nonobviousness, but its absence has no place in evaluating the evidence on obviousness"); *Chore-Time Equipment, Inc. v. Cumberland Corp.*, 713 F.2d 774, 781 (Fed. Cir. 1983) ("References to synergism as a patentability requirement are, therefore, unnecessary and confusing.") *See also* Robert P. Merges, *Commercial Success and Patent Standards: Economic Perspectives on Innovation*, 76 Cal. L. Rev. 803, n. 39 (1988) (describing discontent with the synergy test). *Amici* do not advocate implementation of a "synergy test." However, the presence of unanticipated effects from the interactions among components of an invention may be evidence of nonobviousness. Conversely, the fact that a novel development consists only of a combination of prior art elements——each of which performs the same function as it did in prior art settings—may be evidence that the combination was an obvious one, perhaps motivated by some social change.

In sum, various contextual factors may have spurred the combination or extension of previously available technology in a way that would have been obvious to a person having

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[2] See, however, Brief of Economists and Legal Historians filed in this case for a historical perspective on this Court's obviousness jurisprudence.

ordinary skill in the art in light of those factors. The Federal Circuit's suggestion test, combined with its narrow focus on "indicia of nonobviousness," ignores contextual indications of obviousness. This one-sided view of the inventive milieu leads to the issuance of patents on routine advances that result from applying ordinary inventive skill to changing circumstances.

V. The Suggestion Test is Not Reasonably Applicable by the PTO and Negates the Agency's Expertise

Besides the substantive failings detailed in the preceding sections, the Federal Circuit's approach fails to take advantage of the technical expertise of the examiner corps and arguably undermines the role of the PTO as a matter of administrative law. *See* Stuart Minor Benjamin and Arti K. Rai, *Who's Afraid of the APA? What the Patent System Can Learn from Administrative Law*, 95 Geo. L.J. (forthcoming 2006) (arguing that the Federal Circuit's approach to patent law is inconsistent with standard administrative law doctrines).[3] Moreover, the suggestion test is extremely difficult for the PTO to implement effectively. Though this particular case arises out of infringement litigation, it is important in crafting an approach to the obviousness issue to keep in mind that "the primary responsibility for sifting out unpatentable material lies in the Patent Office." *Graham*, 383 U.S. at 18. The inability of the PTO to weed out obvious patents under the Federal Circuit's suggestion test is extremely detrimental to the health of the patent system because, as this Court has recognized, "[t]o await litigation is—for all practical purposes—to debilitate the patent system." *Id.* The difficulty the PTO has in applying the suggestion test stems from the Federal Circuit's strict requirement that the patent examiner search for and present additional evidence in the record when the examiner seeks to rely on the knowledge of one skilled in

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[3] It is our understanding that a copy of this article will be filed in this case by Professors Benjamin and Rai.

the art or the nature of the problem to be solved to demonstrate a suggestion to combine prior art references.

Federal Circuit precedent makes clear that patent examiners cannot rely on common knowledge in the art or on their own technical knowledge in the art as a basis for rejecting patent applications. *See, e.g., In re Lee*, 277 F.3d 1338, 1345 (Fed. Cir. 2002) ("'Common knowledge and common sense,' even if assumed to derive from the agency's expertise, do not substitute for authority when the law requires authority.") (Citation omitted). As a result, the Federal Circuit has forbidden the PTO to deny a patent based on common knowledge in the art unless the examiner can point to specific evidence of a teaching, suggestion, or motivation to combine the particular existing references and has limited the ability of the PTO to rely on official notice as it is generally conceived in the agency context. *See* Benjamin and Rai, 95 Geo. L.J. at __.

Excessively stringent evidentiary requirements and framing of the ultimate judgment of obviousness as essentially a factual inquiry hamper the PTO's application of its expertise to the obviousness question. Common knowledge is not often the subject of detailed written exposition, making it difficult and costly for the patent examiner to find evidence of common knowledge to meet the Federal Circuit's suggestion test. As the National Academy of Sciences recently explained in its report on the patent system: "[S]cientists, artisans, and creative people generally speaking strive to publish non-obvious information. So if it is obvious to those of skill in the art to combine references, it is unlikely that they will publish such information." Stephen A. Merrill et al., National Research Council, National Academy of Sciences, *A Patent System for the 21st Century* (2004) at 90.

Moreover, technological advances and expansive interpretations of the scope of patentable subject matter have resulted in the issuance of patents in areas, such as software and

business method patents, in which the common knowledge of the art has not traditionally been documented in easily accessible forms such as patents and academic publications. The Federal Circuit's emphasis on documentation of what is widely known in the art is particularly problematic for patenting in these areas. *See, e.g.*, Margo A. Bagley, *Internet Business Model Patents: Obvious by Analogy*, 7 Mich. Telecomm. & Tech. L. Rev. 253, 279-80 (2000-2001) (discussing the limited availability of documentary prior art in the areas of business methods and software). In attempting to find documentation of what is commonly known in the art, patent examiners must waste time and resources searching for specific articulations of common, but largely tacit, knowledge. This is particularly unfortunate since PTO examiners are selected and trained in the subject matter of the patents they examine and their duties naturally keep them up to date.

In sum, the Federal Circuit's obviousness test fails to take advantage of agency expertise and all but requires the PTO to base its analyses on documentary evidence of obviousness, which will often be difficult and costly to find or unavailable. The test will thus allow patents to issue in many cases where combining pre-existing technologies would have been an obvious step for a person having ordinary skill in the art.

VI. The Suggestion Test's Low Standard of Patentability is Bad Patent Policy

The low standard for patentability that results from application of the suggestion test leads inevitably to the grant of patent rights to combinations of existing technological knowledge for which no patent incentive was needed. Such patents not only do not "promote the Progress of . . . useful Arts," *see* U.S. Const., art. I, § 8, cl. 8, they have pernicious social effects. *Amici* are convinced that the suggestion test results in the issuance and enforcement of many such patents that should be declared invalid as obvious. *See, e.g.*, Glynn S. Lunney, Jr., *E-Obviousness*, 7 Mich. Telecomm. & Tech.

L. Rev. 363, 370-379 (2000) (presenting a statistical study showing a drop in Federal Circuit patent invalidations for obviousness, and identifying the Circuit's suggestion test as one of the causes).

The availability of patents on obvious combinations overwhelms the Patent and Trademark Office with applications for patents on obvious combinations of previously existing technologies, promotes socially wasteful races to patent these obvious advances, and raises patent search costs for those seeking to combine existing technologies. *See, e.g.*, Bronwyn H. Hall and Dietmar Harhoff, *Post-Grant Reviews in the U.S. Patent System—Design Choices and Expected Impact*, 19 Berkeley Tech. L.J. 989, 992-1000 (2004) (discussing potential problems caused by low quality patents, presenting evidence of issuance of lower quality patents by the PTO, and relating the issuance of lower quality patents to the suggestion test for obviousness).

The overpatenting that results from the Federal Circuit's suggestion test creates an unnecessary drag on innovation through higher prices to consumers and transaction costs associated with searching for, licensing, and enforcing these unnecessary patents. Those interested only in combining existing technologies in obvious ways must nonetheless expend resources searching for possible patents on those obvious combinations. Anyone who wants to use an unnecessarily patented combination of technologies will have to negotiate permission from and pay royalties to the owners of any patents on the individual elements, and to the owner of the patent in the combination. The costs of patents that are unnecessary to promote innovation also include "the benefits lost when a course of research is foregone out of fear that a product cannot be produced without obtaining a license that may be unavailable. Even when a product is produced, there may be costs in restructuring a research program to design around existing patents." Barton, 43 IDEA at 475, 494. When two or more parties can block the practical application

of technology, the difficulty and social cost of developing that practical application increases significantly, raising the likelihood of "patent thickets." *See, e.g.*, Carl Shapiro, *Navigating the Patent Thicket: Cross Licensing, Patent Pools, and Standard Setting*, in *Innovation Policy and the Economy* (Adam Jaffe et al., eds., 2001); *see also* Michael A. Heller & Rebecca S. Eisenberg, *Can Patents Deter Innovation? The Anticommons in Biomedical Research*, Science, May 1, 1998, at 698-99.

The low threshold of nonobviousness promotes undesirable business practices. It provides incentives to invest in socially wasteful efforts to patent run-of-the-mill combinations of previously known technologies and makes it easier to "trap" competitors in inadvertent infringement, thus motivating the "patent troll" business model. It also motivates the practice of "evergreening"—using minor improvement patents to retain control over a technology (such as a drug) that would otherwise go into the public domain. In addition, it motivates true innovators to divert some of their resources away from further technical advancement and toward identifying and claiming all possible combinations of their new technologies with existing technologies in order to prevent others from getting patents that would block important and obvious applications of their technologies.

The predictable result of the availability of patents on obvious combinations of existing elements is that it becomes more difficult to bring the benefits of technology to society, thus undermining the ultimate goal of patent law.

VII. This Court Should Mandate a Return to the *Graham* Approach, Asking Whether the Claimed Invention Could Be Made By Routine Application of the Level of Ordinary Skill in the Art

The perspective of the "person of ordinary skill in the art" must be brought back to its rightful place in the legal inquiry into obviousness. While the occasional appearance in

Federal Circuit opinions of more leeway for suggestions stemming from the "nature of the problem" is an improvement over the strict approach evident in this case, it is not a solution. The expansion of the "nature of the problem to be solved" prong hides a legal decision within a supposed question of fact and masks an inadequate determination of the level of skill in the art. Especially when a thorough investigation of the level of skill in the art is not made, expanded use of the "nature of the problem" prong also invites a back-door re-entry of hindsight bias because it is most likely to be applied to simpler technologies where the connection of the nature of the problem to be solved to the claimed invention is most apparent to courts.

The presence of a "teaching, suggestion, or motivation to combine" prior art references evidences obviousness, but the absence of such a suggestion to combine is not an appropriate test for nonobviousness. This Court should require a return to the inquiry set out in *Graham*. The analogous arts doctrine provides a methodology for determining the scope and content of the prior art which—especially if updated to allow for progress in search technology and the increasing importance of interdisciplinary research and development teams—is entirely adequate for the task. A robust inquiry into the level of ordinary skill in the art would set the stage for a legal determination of whether the application of that ordinary skill to the problem at hand would have led to the claimed solution in the course of baseline competition.

The factual determination of the level of ordinary skill in the art should not be limited to the content of prior art references, the common knowledge of those in the art, and any suggestions to combine the art that are found in those references or knowledge. It should also encompass the PHOSITA's ordinary inventive skills, the tools and methods routinely applied in her field, and the kinds of experimentation she does and problems she solves as a matter of course. As with the determination of analogous arts, the determination of level of ordinary skill should evolve with the technology itself, incorporating, for example, the extent to which

research and development in a particular field routinely draws on interdisciplinary teams.

Once a more complete picture of the ordinary skill in the art is drawn, the legal inquiry as to obviousness can proceed to determine "if the difference between the new thing and what was known before is not considered sufficiently great to warrant a patent." Because a serious inquiry into the level of skill in the art would incorporate not only what is already known in a particular field, but also what is routinely invented, it would naturally incorporate technological differences in the competitive baseline. An obviousness standard that takes into account the routine experimentation and problem-solving skill of the PHOSITA is also self-correcting to some extent. If a more stringent patentability standard reduces the baseline progress in a particular field, a patentability standard based on the routine level of skill and progress in the field will adjust so that more patents are issued.

With the *Graham* paradigm reinstated, the consideration given to the technical and social context in which a claimed invention was made should expand to incorporate not only factors—such as long-felt need—evidencing nonobviousness, but also factors—such as a newly appreciated need or a recent technological development—suggesting the obviousness of a claimed invention.

All obviousness tests are susceptible to two types of error—erroneous issuance and erroneous rejection. Both types are socially costly. The Federal Circuit's suggestion test bends over backwards to prevent hindsight (and hence prevent the rejection of patents that should have issued), but does little to prevent unwarranted patent issuance. The *Graham* approach, on the other hand, mitigates the risk of either form of error—avoiding hindsight with its structured inquiry into the factual context at the time of invention, while protecting against the issuance of patents on routine advances with a robust inquiry into the level of ordinary skill in the art

and the inventive context. The *Graham* approach better serves the public welfare.

CONCLUSION

For the foregoing reasons, the Court should set a standard for the obviousness determination that prevents the patenting of numerous advances that would have occurred as a result of routine development, returns the focus to the problem-solving capability of the person having ordinary skill in the art, accommodates contextual evidence of obviousness as well as nonobviousness, and makes room for the application of USPTO expertise.

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